

### XIII. A LIST OF THE LAND AND FRESH-WATER SHELLS OF THE ISLE OF PINES.

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The Isle of Pines has been visited by most of the collectors of land-shells interested in the Cuban fauna, and its list of known mollusks has been fairly complete from early times. It is quite likely, however, that careful search would bring to light some of the smaller species common on the adjoining large island, but as yet unrecorded in the census of the Isle of Pines. Among such are the Zonitidæ, the Pupidæ, some of the smaller Stenogyridæ, and several fresh-water species of somewhat wide distribution.

A large proportion of the species of the island are confined to the two small ranges of limestone mountains in the extreme northern part, known as the Sierra de Casas and the Sierra de Caballos. Of the latter there is an extension in the form of an elevated peninsula with steep sides, which projects into the sea, and is known as Punta del Colombo. The other mountains of the island, such as the Cañada Range and the elevations back of Santa Fé, are of limestone crystallized into a hard marble, and therefore offer but poor stations for mollusks. The southern portion of the island, separated by a swamp from the northern half, offers a good station for a restricted group of land-snails, which flourish amid the conditions presented by a flat porous limestone covered by scrubby forest-growths. But little has been reported from this region, as it is inaccessible and of no interest to travellers. It is most probable that its fauna will prove to be quite the same as that encountered along the coastal strip in Cuba, where conditions are very similar. The following list includes all the species so far recorded from the island with the addition of a few in my collection taken by myself or by Dr. Nicholas.

#### 1. *Megalomastoma procer* Poey.

*M. procer* POEY, Memorias Hist. Nat. Cuba, Vol. I, 1854, p. 404, Pl. 13, figs. 12-18.

*Habitat.*—Casas and Caballos Mountains.

Usually darker in color than the closely allied *M. mani* Poey, which occurs in the Organ Mountains of western Cuba.

2. *Rhytidopoma rugulosum* (Pfeiffer).

*Cyclostoma rugulosum* PFEIFFER, Wieg. Archiv, Vol. I, 1839, p. 356.

*Habitat*.—Casas and Caballos Mountains; Punta de Colombo.

This species is the type of the genus *Ctenopoma* Shuttleworth (1856) preoccupied (1855). The generic name here used was substituted by Sykes (1901).

2a. *Rhytidopoma rugulosum clathratum* Gould.

*Cyclostoma clathratum* GOULD, Boston Journal Nat. Hist., Vol. IV, 1842, on cover (no page).

Reported from the Isle of Pines by Arango and authors under the specific name *denegatum* Poey (1856). There can be no doubt of the specific identity of *denegatum* Poey and *clathratum* Gould, the latter name having priority.

2b. *Rhytidopoma rugulosum nodulatum* (Poey).

*Cyclostoma nodulatum* POEY, Memorias Hist. Nat. Cuba, Vol. I, 1852, p. 104.

A specimen in my collection derived from Poey is marked as from the Isle of Pines. I have seen no others, and believe the record needs confirmation.

3. *Chondropoma dissolutum* (Pfeiffer).

*Cyclostoma dissolutum* PFEIFFER, Malakozoologische Blätter, Vol. I, 1854, p. 158. Novit. Conch., Vol. I, p. 95, Pl. 26, figs. 12-16.

*Habitat*.—Casas and Caballos Mountains; Punta del Colombo.

[“*Cyclostoma*” *semicanum* Morelet.

A species described by Morelet in Test. Novissima Ins. Cub., Pt. 2, 1851, p. 20, and erroneously ascribed to the Isle of Pines. It is probably *Annularia blaini* (Gundlach) Pfeiffer, Mal. Blätt, Vol. 10, 1862, p. 197, of the Organ Mountains of Pinar del Rio, Cuba.]

4. *Chondropoma wilcoxi* Henderson, subsp.

*Chondropoma wilcoxi* HENDERSON, Nautilus, Vol. XXVI, 1912, p. 45; *l. c.*, Vol. XXVII, 1913, Pl. 3, fig. 1.

*Habitat*.—Caripatchibey (?). Probably southern coast.

A lot collected by Dr. Nicholas in my collection are evidently referable to *C. wilcoxi*, although not typical. The type is from the Ensenada de Cochinos in Cuba and not from the Isle of Pines where the conditions of environment are identical. These shells are smaller and of slightly heavier texture.

5. *Tudora moreletiana* (Petit).

*Cyclostoma disjunctum* MORELET, Test. Nov. Ins. Cub., No. 58, 1849 (*Preocc.*).  
—*Cyclostoma moreletianum* PETIT, Journal de Conchyliologie, Vol. I, 1850, p. 46.—*Cyclostoma moreletianum* PFEIFFER, in Martini & Chemnitz, Syst. Conch. Cab. (*Cyclostoma*) Pl. 37, figs. 27-28.

*Habitat.*—Casas Mountains.

6. *Tudora pupoides* (Morelet).

*Cyclostoma pupoides* MORELET, Test. Nov., Vol. I, 1849, p. 23; POEY, Memorias. Hist. Nat. Cuba, Vol. II, 18—, Pl. 3, fig. 17.

*Habitat.*—Caballos Mountains, Punta del Colombo.

Until a revision of the Antillean operculates can be made, the systematic position of this and the preceding species must remain uncertain. In both the development of a breathing syphon at the upper angle of the aperture is to be observed. This character suggests Dr. Dall's genus *Opisthosiphon* (Proc. Mal. Soc., Vol. VI, 1905, p. 209) provided that genus can be maintained. The critical character of *Opisthosiphon* is one which to some degree is present in other operculate genera, and to include all species possessing such a breathing arrangement would seem to do violence to other characters of more basic generic importance.

7. *Priotrochatella constellata* (Morelet).

*Helicina constellata* MORELET, Revue Zoologique, 1847, p. 144; Test. Nov., p. 21.—*Trochatella constellata* PFEIFFER, in Martini & Chemnitz, Syst. Conch. Cab (*Helicinaceen*), Pl. 9, figs. 40-41.—*Priotrochatella constellata* WAGNER, in Martini & Chemnitz, Syst. Conch. Cab. (*Helicinaceen*), 1911, p. 16.

*Habitat.*—Casas Mountains.

8. *Priotrochatella stellata* (Velasquez) (Poey).

*Helicina stellata* VELASQUEZ, in Jay's Catalog, 1850, p. 262, (name only).—*Helicina stellata* POEY, Memorias Hist. Nat. Cuba, Vol. I, 1852, p. 117; Pl. 5, figs. 18-20.—*Priotrochatella stellata* WAGNER, Denk. Akad. Wien, Vol. LXXVII, 1905, p. 370, Pl. I, figs. 25a and b, F. 16.—MARTINI & CHEMNITZ (*Helicinaceen*), 1911, p. 17, Pl. 1, fig. 4 and Pl. 2, figs. 12-13.

*Habitat.*—Caballos Mountains; Punta del Colombo.

This and the preceding species are two of the most remarkable land-shells of Cuba, both by reason of their bizarre form and their apparently isolated position in the assemblage of Antillean operculates. Notwithstanding this, the inclusion of the genus in an oriental subfamily of Helicinids, suggested by Fischer (Journ. de Conch., Vol. XLIV, p. 88) and adopted by Wagner, needs careful scrutiny.

9. *Eutrochatella* (*Ustronia*) *scopulorum* (Morelet).

*Helicina scopulorum* MORELET, Test. Nov. Ins. Cub., 1849, p. 20.—*Helicina luteoapicata* POEY, Memorias Hist. Nat. Cuba, Vol. I, 1854, p. 394.—*Eutrochatella* (*Ustronia*) *scopulorum* WAGNER, in Martini & Chemnitz, Syst. Conch. Cab. (Helicinaceen), 1911, p. 120, Pl. 24, figs. 16-18, 22-23.

*Habitat*.—Casas and Caballos Mountains.

An abundant species on the walls, "paradones," of the mountains. It belongs to the group of *E. straminea* Morelet and *E. acuminata* Velasquez of the Organ Mountains of Cuba. Poey's *E. luteoapicata* is scarcely worthy of subspecific rank.

10. *Eutrochatella* (*Artecallosa*) *elongata* (D'Orbigny).

*Helicina elongata* D'ORBIGNY, in Sagra Moll. Cuba, Vol. I, 1841, p. 251, Pl. 20, figs. 16-18.—*Eutrochatella* (*Artecallosa*) *elongata* WAGNER, in Martini & Chemnitz, Syst. Conch. Cab. (Helicinaceen), 1911, p. 135; Pl. 23, figs. 1-4.

A widely distributed species of western Cuba. Specimens in my collection from Poey, ascribed to the Isle of Pines, are my only authority for its inclusion in this list.

11. *Eutrochatella* (*Artecallosa*) *callosa* (Poey).

*Helicina callosa* POEY, Memorias Hist. Nat. Cuba, Vol. I, 1854, p. 430, Pl. 33, figs. 13-14.—*Eutrochatella* (*Artecallosa*) *callosa* WAGNER, in Martini & Chemnitz, Syst. Conch. Cab. (Helicinaceen), 1911, p. 137, Pl. 22, figs. 25-28.

*Habitat*.—Casas Mountains, on rocky cliffs.

12. *Helicina adspersa* Pfeiffer.

*Helicina adspersa* PFEIFFER, Wieg. Archiv, Vol. I, 1839, p. 354.—*Helicina adspersa* WAGNER, in Martini & Chemnitz, Syst. Conch. Cab. (Helicinaceen), 1911, p. 322, Pl. 63, figs. 25-28.

*Habitat*.—Casas Mountains.

This species, so widely distributed throughout central and western Cuba, is represented in my collection from the Isle of Pines by a single specimen taken on the Casas Mountains. It is smaller than the average, but otherwise typical. The many color-varieties of this pretty little shell have brought to it many names. The specific names *variegata* D'Orbigny, *marmorata* D'Orbigny, *tenuilabris* Pfeiffer, *ornata* Férussac, applied to it, are all synonyms.

13. *Proserpina globulosa* D'Orbigny.

*Proserpina globulosa* D'ORBIGNY, in Sagra, Moll. Cuba, Vol. I, 1841, p. 239, Pl. 18, figs. 8, 11.

*Habitat*.—Casas and Caballos Mountains; Punta del Colombo.

14. *Oleacina* (*Lævoleacina*) *oleacea straminea* (Deshayes).

*Achatina straminea* DESHAYES, in Férussac, Hist. Nat. Moll. Terr. & Fluv., Vol. II, 1851, p. 172, Pl. 123, figs. 11-12.—*Oleacina oleacea straminea* PFEIFFER, Nov. Conch., p. 318, Pl. 77, figs. 3-4; PILSBRY, Manual of Conchology, Vol. XIX, 1907, p. 138, Pl. 33, figs. 5, 9.

*Habitat*.—Casas Mountains; probably also Caballos Mountains and Punta del Colombo.

Not distinguishable from forms found about Havana and Matanzas. One specimen taken by Dr. Nicholas (exact locality not given) measures only 19 mm. by 8 mm., though fully adult. It is of very dark color.

15. *Oleacina* (*Lævoleacina*) *solidula* (Pfeiffer).

*Polyphemus solidulus* PFEIFFER, Wieg. Archiv, Vol. I, 1840, p. 252.—*Oleacina solidula* PILSBRY, Manual of Conchology, Vol. XIX, 1907, p. 140, Pl. 33, figs. 3-4.

*Habitat*.—Casas and Caballos Mountains; Punta del Colombo.

Taking the form found about Matanzas as the true species, none of those from the Isle of Pines are wholly typical.

16. *Oleacina* (*Lævoleacina*) *follicularis* (Morelet).

*Glandina follicularis* MORELET, Test. Nov. Ins. Cub., 1849, p. 14.

*Habitat*.—Casas Mountains.

The extremes of this and the preceding species are readily distinguishable, but a number of intermediates connect, so that it is difficult to determine where one begins and the other ends. Typical *O. follicularis* has a shorter antepenult whorl, a less sharply descending last whorl, a narrower and longer aperture and the columella is straighter. Specimens from the Caballos Mountains and Punta del Colombo generally belong to the intermediate forms. Morelet's type evidently came from the Casas Mountains.

17. *Oleacina* (*Lævoleacina*) *subulata* (Pfeiffer).

*Polyphemus subulatus* PFEIFFER, Wieg. Archiv, Vol. I, 1839, p. 352.

*Habitat*.—Casas and Caballos Mountains; Punta del Colombo.

The inadequate Latin descriptions applied to these small Cuban *Oleacinas* by their authors has made critical identification extremely difficult. Assuming Matanzas to be the type-locality, the shells from the Isle of Pines certainly belong to this species.

18. *Spiraxis (Glandinella) poeyanus* (Pfeiffer).

*Bulinus poeyanus* PFEIFFER, Malakozoologische Blätter, Vol. I, 1854, p. 157.—

*Spiraxis (Glandinella) poeyanus* PILSBRY, Manual of Conchology, Vol. XIX, 1907, p. 45, Pl. 3, figs. 37-38.

*Habitat*.—Casas and Caballos Mountains; Punta del Colombo.

[*Obeliscus strictus* (Poey).

*Bulinus strictus* POEY, Memorias Hist. Nat. Cuba, Vol. I, 1853, p. 205.

An eastern Cuban species reported by Poey to have been found in the Isle of Pines. The record needs confirmation.]

19. *Urocoptis (Gongylostoma) pruinosa* (Morelet).

*Cylindrella pruinosa* MORELET, Test. Nov., Ins. Cub., Vol. I, 1849, p. 11.—

*Urocoptis (Gongylostoma) pruinosa* PILSBRY, Manual of Conchology, Vol. XV, 1903, p. 260, Pl. 54, figs. 74-76.

*Habitat*.—Casas and Caballos Mountains.

20. *Pineria beathiana* Poey.

*Pineria beathiana* POEY, Memorias Hist. Nat. Cuba, Vol. I, 1854, p. 430, Pl. 34, figs. 17-18; PILSBRY, Manual of Conchology, Vol. XVI, 1904, p. 110, Pl. 1, fig. 9.

*Habitat*.—Caballos Mountains.

21. *Pineria terebra* Poey.

*Pineria terebra* POEY, Memorias Hist. Nat. Cuba, Vol. I, 1854, p. 429, Pl. 34, figs. 12-16; PILSBRY, Manual of Conchology, Vol. XVI, 1904, p. 110, Pl. 1, figs. 3-4.

*Habitat*.—Casas Mountains (Gundlach); Punta del Colombo, attached to the roots of dead agave plants.

22. *Liguus fasciatus* (Müller).

*Buccinum fasciatum* MÜLLER, Verm. Terr. Fluv., Vol. II, 1774, p. 145.

*Liguus fasciatus* PILSBRY, Manual of Conchology, Vol. XII, 1899, p. 166, Pl. 57-60.

*Habitat*.—Casas and Caballos Mountains; Punta del Colombo; probably the scrub forests of the south coast.

Specimens in my collection show relationships with both the long slender forms of Pinar del Rio and the stouter forms of Havana and Matanzas, and by their color-patterns indicate a mixture of several well-marked races.

23. *Cerion pineria* Dall.

*Cerion (Maynardia) pineria* DALL, Proceedings U. S. National Museum, Vol. XVIII, 1895, p. 6; PILSBRY, Manual of Conchology, Vol. XIV, 1902, p. 198, Pl. 32, fig. 20.

*Habitat*.—The exact locality of this diminutive *Cerion* has not been given.

24. **Thysanophora boothiana** (Pfeiffer).

*Helix boothiana* PFEIFFER, Wieg. Archiv, Vol. I, 1839, p. 351.

*Habitat*.—Casas and Caballos Mountains, Punta del Colombo. Probably occurring throughout the island.

Specimens taken on the Casas and Caballos Mountains are all smaller than the typical forms of the Matanzas region and belong to a race found in the district of the Organ Mountains of Pinar del Rio. The constantly smaller size and coarser texture with deeper sutures entitle the group to subspecific rank. I suggest the name *pinarensis*.

25. **Polygyra paludosa** (Pfeiffer).

*Helix paludosa* PFEIFFER, Wieg. Archiv, Vol. I, 1839, p. 350.—*Helix ramonis* D'ORBIGNY, in Sagra, Moll. Cuba, Vol. I, 1841, p. 142, Pl. 8, figs. 1-4.

*Habitat*.—Nueva Gerona, and probably throughout the island.

This species is well supplied with names. Among them are *lingulata* Férussac, *insularum* Beck, *bardenflehti* B. Villa, etc.

26. **Pleurodonte (Thelidomus) auricoma** (Férussac).

*Helix auricoma* FÉRUSSAC, Hist. Nat. Moll., XVIII, 1819, Pl. 46, figs. 7, 9.—*Pleurodonte (Thelidomus) auricoma* PILSBRY, Manual of Conchology, Vol. IX, 1894, p. 97; *op. cit.*, Vol. V, 1889, p. 62, Pl. 3, figs. 26-30.

*Habitat*.—Casas Mountains, Nueva Gerona; probably more or less over the whole island.

27. **Cepolis (Jeanneretia) multistriata pityonesica** (Pfeiffer).

*Helix pityonesica* PFEIFFER, Mal. Blätt., 1854, p. 156.—*Cepolis (Jeanneretia) multistriata pityonesica* PILSBRY, Manual of Conchology, Vol. V, 1889, p. 49, Pl. 10, fig. 94, & Pl. 32, fig. 60; *op. cit.*, Vol. IX, 1894, p. 180.

*Habitat*.—Caballos and Casas Mountains.

28. **Cepolis (Cysticopsis) comes** (Poey).

*Helix comes* POEY, Memorias Hist. Nat. Cuba, Vol. II, 1854, p. 29.—*Cepolis (Cysticopsis) comes* PILSBRY, Manual of Conchology, Vol. V, 1889, p. 11; *Op. cit.*, Vol. IX, 1894, p. 187.

*Habitat*.—Caballos Mountains.

29. **Galba cubensis** (Pfeiffer).

*Limnaea cubensis* PFEIFFER, Wieg. Archiv, Vol. I, 1839, p. 354.—*Galba cubensis* BAKER, Lymnaeidae, 1911, p. 204.



*Habitat*.—Swamp near Nueva Gerona. Probably occurring in all fresh-waters of the island.

30. **Planorbis lucidus** Pfeiffer.

*Planorbis lucidus* PFEIFFER, Wieg. Archiv, Vol. I, 1839, p. 354.

*Habitat*.—"Isle of Pines" (Morelet). Swamp near Nueva Gerona. This is the *P. lanieriana* of D'Orbigny, *P. taniatus* of Morelet, and *P. redfieldi* of Adams (Jamaica).

31. **Physa cubensis** Pfeiffer.

*Physa cubensis* PFEIFFER, Wieg. Archiv, Vol. I, 1839, p. 354.

*Habitat*.—Isle of Pines (Dr. Nicholas).

32. **Ancylus radiatilis** Morelet.

*Ancylus radiatilis* MORELET, Test. Nov. Ins. Cub., Vol. II, 1849, p. 17.

*Habitat*.—"Isle of Pines."

33. **Ampullaria reflexa** Swainson. (Cf. Tilloch, Phil. Mag., Vol. 61, p. 337).

*Habitat*.—"North side of island." (Dr. Nicholas.) Probably in the "Cienega" or swamp of the central part. Said by the natives to be abundant in the river above Nueva Gerona. These specimens correspond with the large globose form from the interior of Cuba and are of a uniform light olive color, being the species generally accepted as "*reflexa*." Doubt attaches to all the names applied to the *Ampullarias* of Cuba.

34. **Amnicola coronata** Pfeiffer.

*Amnicola coronata* PFEIFFER, Wieg. Archiv, Vol. I, 1840, p. 253.

*Habitat*.—River above Nueva Gerona.

35. **Cyrenella americana** (Morelet).

*Cyrenoides americana* MORELET, Test. Nov. Ins. Cub., Vol. II, 1849, p. 26.

*Habitat*.—"Isle of Pines" (Morelet).

The following table indicates the distribution of the species enumerated in this List of Species from the Isle of Pines:

Of the twenty-eight species of land-snails recorded in this list (omitting the very questionable *Obeliscus strictus*) it appears that



Isle of Pines Only.	Land-shells.	Pinar del Rio.	Havana.			Other Islands.
			Matanzas.	Oriente.		
×	<i>Megalomastoma procer</i> Poey . . . . .					
	<i>Rhytidopoma rugulosum</i> (Pfeiffer) . . . . .	×	×	×		
	<i>Rhytidopoma rug. clathratum</i> Gould . . . . .			×		
	<i>Rhytidopoma rug. nodulatum</i> (Poey) . . . . .		×			
×	<i>Chondropoma dissolutum</i> (Pfeiffer) . . . . .					
	<i>Chondropoma wilcoxi</i> (var.) Henderson . . . . .	Type from Ensenada de Cochinos				
×	<i>Tudora moreletiana</i> (Petit) . . . . .					
×	<i>Tudora pupoides</i> (Morelet) . . . . .					
×	<i>Priotrochatella constellata</i> (Morelet) . . . . .					
×	<i>Priotrochatella stella</i> (Poey) . . . . .					
×	<i>Eutrochatella scopulorum</i> (Morelet) . . . . .					
	<i>Eutrochatella elongata</i> (Orbigny) . . . . .	×				
×	<i>Eutrochatella callosa</i> (Poey) . . . . .					
	<i>Helicina adpersa</i> Pfeiffer . . . . .	×	×	×	?	
	<i>Proserpina globulosa</i> Orbigny . . . . .	×	×	×	×	
	<i>Oleacina olacea straminea</i> (Deshayes) . . . . .	×	×	×	?	Bahamas
	<i>Oleacina solidula</i> (Pfeiffer) . . . . .	×	×	×	?	Bahamas
×	<i>Oleacina follicularis</i> (Morelet) . . . . .					
	<i>Oleacina subulata</i> (Pfeiffer) . . . . .	×	×	×	?	
×	<i>Spiraxis poeyana</i> Pfeiffer . . . . .					
	<i>(Obeliscus strictus)</i> (Poey) . . . . .				×	
×	<i>Urocoplis pruinosa</i> (Morelet) . . . . .					
×	<i>Pineria beathiana</i> Poey . . . . .					
×	<i>Pineria terebra</i> Poey . . . . .					
	<i>Liguus fasciatus</i> (Müller) . . . . .	×	×	×	×	Florida
×	<i>Cerion pineria</i> Dall . . . . .					
	<i>Thysanophora boothiana</i> (Pfeiffer) . . . . .	×	×	×	×	?
	<i>Polygyra paludosa</i> (Pfeiffer) . . . . .	×	×	×	×	
	<i>Pleurodonte auricola</i> (Férussac) . . . . .	×	×	×	×	Bahamas
×	<i>Cepolis multistriata pityonesica</i> (Pfeiffer) . . . . .					
×	<i>Cepolis comes</i> (Poey) . . . . .					
	<i>Fresh-water shells.</i>					
	<i>Galba cubensis</i> (Pfeiffer) . . . . .	×	×	×	×	Antilles, U.S.
	<i>Planorbis lucidus</i> Pfeiffer . . . . .	×	×	×	×	Jamaica
	<i>Physa cubensis</i> Pfeiffer . . . . .	×	×	×	×	
×	<i>Ancylus radiatilis</i> Morelet . . . . .					
	<i>Ampullaria reflexa</i> Swainson . . . . .		×	×		
	<i>Amnicola coronata</i> Pfeiffer . . . . .	×	×	×	×	Antilles
	<i>Cyrenella americana</i> (Morelet) . . . . .					Antilles

sixteen, or over half the total, are peculiar to the island. Of the seven fresh-water species only one carries no other locality records. This one, the *Ancylus* of Morelet, is probably a synonym of some of the other more widely distributed species of that genus.

Eleven species of land-snails are also from Pinar del Rio and an equal number are of the Havana-Matanzas region. Those from the eastern

part of Cuba as well as the Isle of Pines are species of generally wide distribution throughout the larger island. It is clear, therefore, that the molluscan fauna of the Isle of Pines is a composite of the Western Cuban forms which migrated at the time of a land-connection between the two islands. Since the separation in comparatively recent time there has been an isolation sufficient to develop on the lesser island a faunal or separate element. In the case of almost every species this relationship is obvious and is often very close. The case of the two *Prietrochatellas* is not clear. This is an example of remarkable development along a particular line, or these two species are of exotic origin. The former is likely the case.